

## **3.2 WATER RESOURCES**

### **3.2.1 HYDROLOGY**

#### **SURFACE WATER**

The AVWA and SCWA lie within the Sierra Valley Hydrographic Unit (Sierra Valley unit), which is part of the Middle Fork Feather River Hydrologic Unit (HUC 18020123) of the Central Valley Drainage Basin, in northeastern Sierra County. The approximate boundaries of the Sierra Valley unit are Plumas County in the north, the Sierra crest in the west, a line passing through Babbitt and Sardine Peaks to Henness Pass in the south, and Mount Ina Coolbrith and the Bald Mountains in the east (Sierra County 1996).

The Sierra Valley unit drains the streams originating in the mountains surrounding the Sierra Valley to the middle fork of the Feather River near Beckwourth in Plumas County. The Feather River flows westward into the Sacramento River in the Central Valley (Sierra County 1996).

A number of streams and creeks flow through AVWA and SCWA into the Sierra Valley. The major features are Antelope Valley, Smithneck, Bear Valley, and Badenaugh Creeks (Exhibit 2-1). Antelope Valley, Bear Valley, and Smithneck Creeks flow into the valley from the south. Smithneck Creek has an average annual flow of 8,076 acre-feet per year and a drainage area of 31.6 square miles (DWR 1973, cited in Chapter 8 of Sierra County 1996). Badenaugh Creek flows into the Sierra Valley from the east and originates on the west side of Babbitt Peak. See Section 3.3, “Biological Resources,” and the restoration project description in Appendix D for site-specific descriptions of the main creeks located in the wildlife areas.

#### **GROUNDWATER**

The Sierra Valley Groundwater Basin (SVGWB) extends from the southern edge of the Sierra Valley in Sierra County into Plumas County to the north. SCWA lies above the southeastern portion of the SVGWB and the AVWA lies just outside the southern boundary. Although the AVWA does not lie directly above the SVGWB, it is assumed that its surface waters contribute to the recharge of the groundwater basin. The groundwater basin consists of younger alluvium, lake, and volcanic deposits of the Valley floor. Unconfined groundwater within the SVGWB is generally found less than 100 feet deep and movement is to the north. Confined aquifers between depths of 100 and 2,000 feet contain a large volume of groundwater (Sierra County 1996).

Recharge of the groundwater occurs by infiltration of surface waters through permeable materials in the upper portions of the alluvial fans on the edge of the Sierra Valley. Some recharge occurs from direct precipitation into the higher elevation volcanic rocks, infiltration of precipitation into the Valley floor, and percolation of irrigated water. It is approximated that the groundwater storage capacity is 2,500,000 acre-feet for the Sierra County portion of the SVGWB (Sierra County 1996).

### **3.2.2 WATER QUALITY**

#### **OVERVIEW**

Human use has greatly altered the Feather River watershed, including the creeks located within the wildlife areas. Past mining, grazing, and timber harvest practices; wildfires; and railroad and road construction have resulted in accelerated erosion, degraded water quality, decreased vegetation and soil productivity, and degraded terrestrial and aquatic habitats. Long-term vegetation disturbance and gully erosion has led to a dramatic change in hydrology, leading to reduced summer flow, higher summer water temperature, lower water tables, reduced meadow storage capacity, and a trend from perennial to intermittent flow. Many downcut streams no longer sustain late-season flow, causing adverse effects on riparian and upland vegetation, aquatic communities, and downstream water uses (FRCRM 2008a).

The Feather River Watershed Coordinated Resource Management (FRCRM) Watershed Monitoring Program summarizes water quality data from numerous sites in the Feather River Watershed. The closest sampling location to the wildlife areas is located at Beckwourth in the Middle Fork Feather River watershed. The 2004 FRCRM Watershed Monitoring Program report indicated that at the Beckwourth station pebbles coarsened and that the channel was gradually increasing in entrenchment (i.e., gullies). It had the highest total dissolved solids and electrical conductivity of all reported sites, and was five times higher in phosphorus than the next highest site. It also had the highest concentration of ammonia, aluminum, cadmium, chromium, iron, lead, and zinc (FRCRM 2004a).

The *Watershed Assessment Report—Antelope Valley Watershed and Watershed of an Unnamed Tributary to Bear Valley Creek* (Appendix D) states that the stream channel system of the Antelope Valley watershed is severely degraded. It describes “stream channel degradation and development of entrenchments (aka gullies)” ... “as a result of stream channel relocation and channelization during the early logging era, construction and relocation of Antelope Valley Road, and construction of Palen Reservoir and a system of diversion ditches. The stream system continues to degrade today and the entrenchments that have developed continue to widen (actively erode), reducing and dewatering adjacent meadows and other landscape features.”

The 1977 Sierra County General Plan Wildlife Element identified several streams degraded by sediment. Stream ratings focused on habitat deterioration. Antelope Valley Creek was classified as severely degraded with highly erosive soils. The condition of Smithneck Creek was categorized as substantially altered with stream channelization or bank alteration and surrounding fragile meadows and riparian vegetation (Sierra County 1977, as cited in Chapter 8 of Sierra County 1996). While this stream inventory is not recent (1977), it provides a broad indication of current conditions and it indicates that stream degradation has been an ongoing problem for decades. The conditions of some creeks may have worsened, and it does not appear that conditions have substantially improved.

It is anticipated that the proposed watershed restoration activities would substantially improve water quality, as it relates to erosion and sedimentation, by reconnecting entrenched creeks in the wildlife areas with their floodplains. These floodplains are essential buffers, absorbing the impacts of high flow events and high nutrient and sediment discharges. They absorb water during the wet season and release much of this captured water during the dry season. Stream channels downstream of proposed watershed restoration activities would become more stable and show significantly improved water quality conditions (Benoit, pers. comm., 2007).

## **BENEFICIAL USES**

In California, beneficial uses of a water feature are legally designated by the Regional Water Quality Control Board (RWQCB), in this case the Central Valley RWQCB. They are described in the Sacramento–San Joaquin River Basin Plan (Basin Plan) (Rooney and Schnabel 1998). Beneficial Use designations determine applicable water quality objectives. The Basin Plan does not identify beneficial uses specific to any of the creeks located within the wildlife areas; however, they are the same as those indicated for other water features in the Sierra Valley. The Beneficial Uses designations for waters in the Sierra Valley are (SVRCD 2005):

- ▶ Agriculture,
- ▶ Recreation Contact and Other Noncontact,
- ▶ Freshwater Habitat,
- ▶ Spawning, and
- ▶ Wildlife Habitat.

### **3.2.3 WATER RIGHTS**

#### **RIPARIAN WATER RIGHTS**

No California statute defines riparian rights, but court decisions have established a common law doctrine of riparian rights that has been confirmed by the provisions of Section 3, Article XIV of the California Constitution (California Water Code Sections 100, 101).

In general, riparian lands are those that are traversed by or border a natural watercourse. A riparian right enables an owner of land bordering a natural watercourse to take and use water on his riparian land. Each owner may have a right, correlative with the right of each other riparian owner, to share in the reasonable beneficial use of the natural flow of water that passes his land.

The State Water Resources Control Board (SWRCB) considers natural flow as not including return flows derived from use of groundwater, water seasonally stored and later released, or water diverted from another watershed. Riparian rights may be used to divert the natural flow of a stream but may not be used to store water for more than 30 days or divert water released from storage. Riparian land must be in the same watershed as the water source and must never have been severed from the source of supply by an intervening parcel without reservation of the riparian right to the severed parcel. No permit is required for use of riparian rights. A record of water use under riparian claim can be established by filing a Statement of Water Diversion and Use with the SWRCB (SWRCB 2000).

## **APPROPRIATIVE WATER RIGHTS**

An appropriative right is required for use of water on nonriparian land and for storage of water. Generally, appropriative rights may be exercised only when there is a surplus not needed by riparian water users.

Before 1872, appropriative water rights could be acquired by simply taking and beneficially using water. In 1872, Sections 1410 through 1422 of the California Civil Code were enacted, which established a procedure for the appropriation of water. A priority of right was established by posting a notice of appropriation at the proposed point of diversion and by recording a copy of the notice with the respective County Recorder.

Appropriative rights initiated after December 19, 1914, the effective date of the California Water Commission Act, require a permit from the state (California Water Code, Section 1225) and compliance with the provisions of Division 2, Part 2 of the California Water Code. The California Code of Regulations, Title 23, Waters, contains regulations for the administration of water rights and water quality activities of the SWRCB.

Once acquired, an appropriative right can be maintained only by continuous beneficial use of water. The amount that now can be rightfully claimed under an appropriative right initiated before December 19, 1914, has, in general, become fixed by actual beneficial use as to both amount and season of diversion. Successful assertion of an appropriative right that was initiated before December 19, 1914, requires evidence of both the original appropriation and the subsequent maintenance of the right by continuous and diligent application of water to beneficial use (California Water Code Section 1202 [b]). Typically appropriative water rights will be lost after 5 years of nonuse.

A right secured by appropriation is subordinate to all prior vested rights. This limitation may be removed by continuous use adverse to prior rights for 5 years if the owners of the prior rights fail to file legal action to protect themselves during that time. This result is called a prescriptive right to the use of water. A well-established rule is that a prescriptive water right ordinarily cannot be acquired against an upstream user (SWRCB 2000).

In 1924, following many injuries and some deaths resulting from disputes over adjudicated water rights, the State of California established the Watermaster program to provide for general public welfare and safety. The main purpose of the Watermaster program is to ensure water is allocated according to established water rights as determined by court adjudications or agreements by an unbiased, qualified person, thereby reducing water rights court litigation, civil lawsuits, and law enforcement workload. It also helps prevent the waste or unreasonable use of water (DWR 2007).

## **WATER RIGHTS AT AVWA AND SCWA**

In 2002 the Department filed a Statement of Water Diversion and Use with the SWRCB, recording the use of riparian water rights along Antelope Valley Creek. This document states that all available water is used for the

purpose of “Development and maintenance of riparian habitat for fish and wildlife use” and describes 1980 as the “Year of first use (nearly as known).” (Appendix E)

There is a water storage diversion on Department property just upstream of the northern AVWA property boundary along Antelope Valley Creek. This diversion is permitted to the adjacent property owner, Frederick Balderston. This diversion allows a maximum of 126 acre-feet per year to be stored between November 1 and March 1 for the purpose of irrigation (Appendix E).

Bear Valley Creek, Smithneck Creek, and Badenaugh Creek in SCWA are part of an adjudicated watershed with appropriative water rights reserved and in use by several property owners, including the Department. In addition, the Department has riparian water rights along each of these stream reaches.

A 1940 Sierra Valley Decree 3095 (DWR 1940) describes water allocations for a number of creeks in the Sierra Valley region, including Antelope Valley Creek and Smithneck Creek. The portion of Antelope Valley Creek located on Department property in AVWA is not within the Watermaster Service Area for this decree (Scarborough 2007). However, all parcels of SCWA are within this Watermaster Service Area.

The Department owns a first-priority water right at SCWA (under the Decree Name “Clover Valley Lumber Co.”) of 0.40 cfs for industrial or municipal use on 23.5 acres and another first-priority right (under the Decree Name “Laffrenchini, Mary C.”) of 2.4 cfs for irrigation on 166.4 acres. According to Sierra Valley Decree 3095, use of the 0.40 cfs water right is subject to Schedule C (page 33, paragraph 52, line 16), and diversions must be directly applied to beneficial use (page 16, paragraph 24). Water can be diverted from points 77 and 78 for the 0.40 cfs water right and from points 79, 80, 84, 85, and 252 for the 2.4 cfs water right. Water can only be diverted during the March 1 through September 30 diversion season. These points can be seen on the Department of Water Resources tract maps 51 and 49 respectively, and on map sheet 4 of the middle fork of the Feather River (DWR n.d.). The entire decree can be found at <http://www.nd.water.ca.gov/PPAs/Watermasters/ServiceAreas/SierraValley/index.cfm>.

## **WATERSHED RESTORATION AND WATER RIGHTS**

Watershed restoration actions proposed along Bear Valley Creek would be conducted within an adjudicated watershed. As such, information must be provided to the Sierra Valley Watermaster demonstrating that any proposed restoration would not diminish or otherwise adversely affect the water supply of other water users holding appropriated water rights. This task has been identified as a “step-down action,” a term used by the Department to describe an activity that is currently beyond the scope of the LMP (in this case, because of the protracted time frame required to address the issue) and will require additional effort following the preparation and adoption of the LMP.

Importantly, the watershed restoration projects proposed on both Antelope Valley Creek and Bear Valley Creek are anticipated to enhance stream flows (and quality) rather than diminish downstream water supply. Water moves rapidly through degraded water systems during the wet season, thus reducing the likelihood of full groundwater recharge. “Plug and pond” restoration projects dissipate stream flows during the wet season. These stream flows are redirected into historic, remnant channels where they can easily access the historic floodplains and increase groundwater recharge. More water is stored in the upper watershed areas during the wet season and; therefore, more water is available for base stream flows during the dry season. Water is retained during wet months (the flood season) and released during dry months (the irrigation season). Following “plug and pond” restoration, a water balance shows no change in the volume of water moving through the system, only in the timing (Benoit, pers. comm., 2007) and (FRCRM 2008b).